on ascertained facts, and in the main should be devoted to the discovery of a method whereby the infection of the bee by the protozoon *Nosema apis* can be prevented or remedied, and the test of the success of any experiment to cure an affected colony must include, first, the determination of the presence of the causal organisms; secondly, the elimination of any other influence; and, finally, the proof of the freedom of the colony from the parasite after a considerable lapse of time.

THE DAMAGE TO AGRICULTURE BY VERMIN AND BIRDS.[1]

THAT farm vermin and certain wild birds annually commit an extraordinary amount of damage to agriculture and agricultural crops has long been recognised, and the need for more careful and systematic study of the subject has been frequently dwelt upon in these pages. The personal opinion held by "landowners, sportsmen, farmers, rat-catchers, and naturalists," as well as by a large class of bird-lovers, is really of very little moment. Anyone who has had to sift the evidence obtained from such sources knows how thoroughly untrustworthy and misleading it usually is. It is now universally recognised that a very definite and careful procedure is necessary, carried out by experienced and well-trained workers, if one wishes to arrive at a trustworthy and just conclusion respecting the economic status of any wild animal.

During part of 1916–17 an inquiry was undertaken upon this subject under the auspices of the Oxford School of Rural Economy in the counties of Oxfordshire and Norfolk. The method of inquiry will, we feel sure, strike every economic ornithologist, or, indeed, anyone versed in investigating the economic status of any wild animal, as peculiar, if not unscientific. The whole of the data here collected are practically obtained from local sources, viz. the opinions of "landowners, sportsmen, farmers, rat-catchers, and naturalists," and innumerable quotations from various newspapers. True, there are a few references to the writings of Tegetmeier, Gurney, and others, but the bulk of the work that has been done during the past twelve or fifteen years seems to have been ignored. Surely the conditions existing in the two above-mentioned counties do not differ so materially from those in all other counties as to make the results of such investigations superfluous to the farmers of Oxfordshire and Norfolk.

Dr. Gunther would, we feel certain, strongly deprecate such a method in any other biological inquiry. All investigators know how exceedingly difficult it is to arrive at a just conclusion with reference to the feeding habits of any particular species of wild bird and to be able to state definitely whether or not it is beneficial or injurious. To weigh the evidence rightly, long experience in such work is imperative, and whilst the author of this report has no doubt brought together much material that is interesting, it is not such as could be introduced into any scientific inquiry upon the subject, and it carries little, if any, conviction.

What this correspondent thinks or what that one has seen is really of very little importance, and, so far as the species of wild birds are concerned, only a prolonged inquiry, by an experienced investigator, upon the data obtained from numerous stomach and crop contents, as well as careful field observations, will ever prove of any practical service.

The only really valuable item in the whole report is that with reference to the pheasant, and, curiously, this is largely based on the careful investigations of a member of the Cambridge University School of Agriculture, Miss A. F. C.-H. Evershed. The much-maligned pheasant does not support existence upon a diet of mangels, in spite of weighty statements to the contrary. Miss Evershed and others have shown that unless excessive numbers of birds are kept upon a small area, it is distinctly beneficial to agriculture. Dr. Gunther directs attention to the fact that on some estates where many pheasants are reared there is an absence of wireworm, whereas on others where there are no pheasants, wireworm is found in abundance.

In many cases the information given is exceedingly scrappy, *e.g.* in the case of the wild goose, the gull, the crow, the jackdaw, and the lark. As regards the author's conclusions, they do not materially differ from those that have been before the public for some years. We do not think that such reports as these are likely to enhance the reputation of the Oxford School of Rural Economy in the eyes either of the agriculturist or of the more restricted world of science; moreover, in our opinion, they are to be deprecated, as the work is based, not on "the solid ground of Nature," but on a loose and very heterogeneous mass of details obtained from sources not always trustworthy and free from prejudice.

Finally, if the report were intended for the instruction and benefit of farmers, surely a summary of the results obtained elsewhere, from exhaustive inquiries on large numbers of each species, during different months of the year and from various counties, should have been given.

WALTER E. COLLINGE.

NOTES.

FROM the *Scotsman* of March 13 we take this interesting illustration of the intervention of biological Providence in Scotland. "On a recent week-end there was a remarkable run of salmon in one of the Border rivers. The fish ascended the cauld in large numbers, and in the shallow water on either side it was a matter of no difficulty to seize some of them as they made the passage. The spectacle of so many fish passing to the upper waters led to a general relaxation of the ordinary conditions. On one of the days of the week-end, men, women, and boys could be seen in the water up to the knees and armed with gaffs. The operations of those actively engaged were watched by large crowds on the banks. The natural instinct for capture, aided by the food stringency, became so prevalent that an unprecedented spectacle was witnessed on the Sunday. Many who had been attending the morning service found the spectacle of one particular hole, which had practically become a moving mass of fish, too much for ordinary restraint." This is a sad decadence, but it was a miraculous draught of fishes! "The quantity of salmon taken at this point is understood to have been extraordinary. In the town in question, for the space of a week at least, there was no difficulty in keeping within the strictest meat rations. Two of the captured fish weighed 50 lb. and 48 lb. respectively." We have seen in peace-times this extraordinary miracle of fishes—a vivid illustration of the abundance and insurgence of life—and we can vouch, by analogy, for the accuracy of the *Scotsman* account, though "Dora," in her mysterious reticence, forbids us revealing the locus of the recent occurrence.

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[1] "Report on Agricultural Damage by Vermin and Birds in the Counties of Norfolk and Oxfordshire in 1916." By R. T. Gunther. Pp. 92. (Oxford University Press, 1917.) Price 2*s*. 6*d*. net.

SOME articles on recent developments in marine lighting have appeared in the *Engineer*, and the article in the issue for March 15 gives an account of arrangements in unattended lightships and lighthouses, and unattended fog signals, all of which are features of recent practice. There are several methods of operating fog signals on beacons. It is now five years since an automatic acetylene fog gun was introduced by Messrs. Stevenson at Dhuheartach lighthouse. This gun is claimed to have great advantages over the ordinary tonite explosive signal. It is entirely automatic and fires as frequently as four times every minute, whereas the tonite apparatus can scarcely fire more often than once in five minutes, and requires constant attendance. Two acetylene fog guns have been installed on the Clyde at Roseneath Beacon and at Fort Matilda Pier, the operating station being at Gourock Pier. Wireless methods of operation are adopted. When fog appears, an aerial at Gourock transmits energy to aerials on the beacon and at Fort Matilda, thereby completing the circuits of the local batteries, and switches on the fog signals. Once set in action the guns work automatically, giving reports at predetermined intervals which can be heard over a distance of three miles in favourable weather. The guns are supplied with acetylene in measured quantities, the gas being mixed with the necessary proportion of air to produce a good explosive mixture. This application of wireless to other than telegraphic purposes is an important step in the field of marine lighting and signalling.

AT a recent meeting of the Royal Society of Arts, Prof. W. Frecheville read an interesting paper on the development of the mineral resources of the British Empire. He outlined briefly the main sources of production, and discussed more fully the measures that he considers necessary in order to increase the production of metals within the Empire. Like many other authorities, he is convinced that a Mineral Resources Bureau, properly constituted, might play a most important part in such development, and whilst fully admitting the great results attained in the past by our characteristic individualistic methods, he very properly raises the question whether we have not carried the practice of Government aloofness too far. Prof. Frecheville suggests that in Great Britain mining enterprise is hampered by the customary conditions of the mineral lease, inasmuch as this is often for a strictly limited term of years, and sometimes "royalties are exacted from mines which are not paying." He further touches on the injustice inflicted on mining ventures by the existing methods of levying income tax, a question which is at the present moment agitating many of those engaged in studying and fostering British mining industry. Prof. Frecheville rightly lays most stress of all upon the labour problem, and he suggests that "it should not be beyond the bounds of human ingenuity to devise some way by which, in conceding higher wages, more strenuous and intelligent labour should be obtained." This is beyond question the correct attitude towards labour, and if the Government Departments dealing with labour throughout the country had only pursued this policy instead of raising wages without demanding any increase of producing activity, the country would be in every way in a sounder position than it is in to-day.

WE regret to note that the *Engineer* for March 15 records the death of Mr. Greville Jones, who held the position of works manager at Port Clarence Iron and Steel Works for nearly twenty-five years. Mr. Jones, who was born in 1864, took a keen interest in the Cleveland Institution of Engineers, of which he was a past president, and read several papers before this body and also before the Iron and Steel Institute.

DR. ADDISON, Minister of Reconstruction, attended the Women's Liberal Federation Conference at Westminster on March 15, and spoke in support of a resolution (which was adopted) urging the Government to create a Ministry of Health. He said that the Government fully accepted the importance of establishing a Health Ministry as soon as possible. He thought that there was little doubt that very shortly the various authorities concerned would arrive at substantial agreement.

IN NATURE of January 31 mention was made of the suggestion by Mr. R. E. Dennett as to the desirability of a showroom in a London thoroughfare for exhibition of produce and photographs of West Africa, and it was added that further means of transport are required in that part of the globe. We are informed that the British West African Association, which organised the West African Section of the Coronation Exhibition, is establishing such an Exhibition Bureau in the City shortly, and will be glad of any loans or gifts from readers of NATURE interested in tropical Africa.

WE notice with regret the announcement of the death, in his seventy-seventh year, of Sir Swire Smith, M.P., who was well known as a strong advocate of technical education. From 1881–84 Sir Swire Smith was the representative of the woollen industries on the Royal Commission on Technical Education; in 1909 he acted as vice-chairman of the Royal Commission on International Exhibitions; and he was a member of the committee of the National Association for Technical Education, of which the late Duke of Devonshire was president.

THE issue of the *Comptes rendus* of the Paris Academy of Sciences for February 11 contains a note entitled "Observations sur le langage scientifique moderne," signed by twenty well-known French savants, including MM. Bigourdan, Bouvier, Guignard, Haller, Lacroix, and Emile Picard. This memorandum severely criticises the French of some recent scientific papers, and gives examples of badly constructed or unnecessary new words, of the incorrect use of recognised words and of new technical words left undefined, and of a too literal translation or adoption of foreign words. The examples chosen are mainly from papers on electricity, chemistry, biology, and bacteriology.

THE question of restrictions on coarse fresh-water fishes was discussed in the House of Lords on March 13. Lord Desborough proposed that the close season for angling for these fish should be shortened, and also that the restrictions on angling for eels should be removed at all times. It was announced that the Board of Agriculture and Fisheries had decided to reduce the close season for coarse fish by one month. Lord Buckmaster also referred to the general neglect of the culture of fresh-water fishes other than Salmonidæ. Little had been done in addition to the imposition of close times. The question of the destruction of fish by seagulls ought to be considered; steps should be taken to prevent pollution, as, for instance, that of fishing waters by tar from roads, and the whole question of the development of the fresh-water fisheries, from both the practical and the scientific viewpoints, ought to be considered in the interest of the food supply of the country.

At the general meeting of the British Ornithologists' Union, held in the rooms of the Zoological Society of London, on March 13, Dr. W. Eagle Clarke, keeper of the Natural History Department of the Royal Scottish Museum, Edinburgh, was elected president in succession to Col. Wardlaw Ramsay. As a leading authority upon bird-life, Dr. Clarke's writings, especially upon migration, and his activities on the late British Association Committee on Bird Migration, and on the Government Departmental Committee of the Home Office at present having under revision the Wild Birds' Protection Acts, are well known. It is perhaps less well known that under his care the exhibited collection of British birds in the Royal Scottish Museum has become second to none in the kingdom, and that his forthcoming edition of Yarrell's "British Birds," which will make a special feature of immature plumages and of migration, promises to be one of the most comprehensive guides to the avifauna of the British Isles.

The *Revue générale des Sciences* for February 15 contains an obituary notice by M. A. Boularic of Prof. G. Meslin, director of the Physical Institute of the University of Montpellier, who died on January 11. Prof. Meslin was born at Poitiers in 1862, and after studying at the Ecole Normale Supérieure became a secondary-school teacher. In 1890 he took his doctor's degree, and became lecturer at the University of Montpellier, and in 1904 director of the Physical Institute. His pleasant voice and his clear way of presenting his facts made his lectures fascinating both to his students and to the general public. His principal scientific work was optical; his paper on the reflection of light from the surfaces of thin metal films, and his modification of Billet's bi-lens experiment to produce semicircular fringes, are probably best known. He took charge of two solar eclipse expeditions, and proved that there is no elliptical polarisation in the light of the solar corona. Some of his most recent work was on magnetism, and his numerous results for the magnetic susceptibilities of para- and dia-magnetic metallic salts are of great value.

News has just reached us of the death of Miss B. Lindsay, on December 16 last, at Onchan, Isle of Man, who may well rank as one of the women pioneers in morphological studies. Miss Lindsay's career as an investigator started with certain research work in connection with the embryology of the chick—work undertaken at the suggestion of Dr. H. F. Gadow. Later she compiled her "Text-book of Zoology," and afterwards two volumes in Newnes' "Useful Story Series," one on "Animal Life," the other on "The Microscope." Although rather inclined to abstract speculation, Miss Lindsay was yet very matter-of-fact, and methodical in her work. To put her work on the breastbone of birds upon a broader basis than the "everlasting chick," she collected numbers of seabirds' embryos at the Isle of Man, and a fine series of ostrich embryos. She was the first to show that ostriches are descended from birds possessed of the full power of flight. Her little textbook must have made many friends, because it is a sensibly, partly humorously, written introduction for those who take an interest in what have since become known as Nature-studies. It was while she was living at St. Andrews and working at the Gatty Marine Laboratory that Miss Lindsay had the opportunity of carrying out those investigations with regard to molluscs that she had long wished to conduct. Of her own time and labour she was generous in the largest degree, and she will be long remembered by those she lived amongst for her many thoughtful and kindly acts.

Geologists who are interested in the unique collection of Silurian fossils in the Ludlow Museum will be glad to learn that the Ludlow Natural History Society has received a bequest of 200*l.* under the will of the late Mrs. Agnes Mary White. Mrs. White was the daughter of Mr. Humphry Salwey, one of the most active geologists in the Ludlow district during the middle of last century.

Eggs of an extinct ostrich are already known from the surface deposits of northern China. One specimen from Yao Kuan Chang, fifty miles south-west of Kalgan, was obtained by Harvard University in 1898, and another specimen from the banks of the Yellow River in Honan was acquired by the American Museum of Natural History last year. Mr. Harold M. Clark, of Wuan, Honan, now writes to the *North China Herald* that eggs of this kind are not uncommon in his neighbourhood, and are washed out of the river banks by floods. They seem to occur in the same manner as the eggs of Æpyornis on the shores of lakes in Madagascar. The Chinese eggs are about 7 in. in length, and thus scarcely larger than those of an average ostrich. No bones of the birds which laid the eggs have hitherto been noticed in the same deposits.

Mr. J. Reid Moir has contributed to the Proceedings of the Suffolk Institute of Archæology (vol. xvi., part ii.) a valuable summary of our present knowledge of ancient flint implements in Suffolk. The paper is illustrated with a series of effective diagrams of typical implements of each successive period, and as nearly all stages are represented in Suffolk it becomes a useful work of reference of more than local interest. There may still be differences of opinion as to the rudely chipped flints which are ascribed to the handiwork of Pliocene man, but the arguments for their age and present interpretation are very clearly stated. We can only hope that before long Mr. Moir's persistent researches may be rewarded by the discovery of human remains of the same antiquity. In Suffolk, as in other western European localities, the finely worked Acheulean implements are certainly older than the less skilfully made chipped flakes of the Mousterian type.

Sir Thomas Holland, in his presidential address at the Chemists' Conference at Lahore, reported in the *Pioneer Mail* for January 18, laid down a far-reaching programme of research—the possibility of preparing in India chemicals used in textile and other industries; of other chemicals now imported but capable of local production; advice to firms and the undertaking of research for which their own staffs have not the time or facilities; preparation of supplies for medical services; systematic investigation of raw materials of probable economic value; and the publication of results when possible. This means the appointment of a large scientific staff, and there can be no doubt that as one result of the war and the obstruction of sea communications the Government of India will devote increased attention to the development of Indian manufactures.

The *Pioneer Mail* of January 11 announces that much progress has been made in supplying the Indian hospitals with drugs and other materials from Indian sources. Absolute alcohol, previously imported from abroad, is now made at the Government depôts at Bombay and Lahore, and by private firms at Calcutta and Ahmedabad. Belladonna is being largely cultivated in Kumaun, and among other drugs now supplied from Indian sources are thymol, ether for pharmaceutical purposes, lysol, calcium chloride, lactose, and aniline oil, while arrangements are being made to provide in India all the various nux vomica preparations. Bandages and dressings are now being locally made, and glass is being manufactured for laboratory, medical, and surgical purposes. Artificial limbs of the latest pattern are being manufactured at Bombay. In short, the demands of the war in the domain of medicine and surgery are being met in India on a very considerable scale.

A REPORT of a bacteriological investigation of the City of Dublin milk supply is published by the Cooperative Reference Library, Dublin. Of more than 100 samples analysed, only seventeen could be considered satisfactory; all the others would be classed as low-grade milks unsuited for drinking in the natural state. The examinations were conducted by Mr. D. Houston, who gives a general discussion of the results obtained, and a preface is contributed by Dr. St. John Gogarthy on the importance of a pure milk supply.

THE extraction of quite a small metallic fragment from the brain is recorded in the *Archives of Radiology and Electrotherapy* for February (No. 211). The foreign body was localised by the X-rays, and the skull opened. The points of the forceps extractor were then introduced into the brain, and manipulated so that the shadows of the fragment and of the points of the extractor fell exactly in the middle of a small fluorescent screen attached to the instrument. After some manipulation the fragment was grasped and withdrawn. The blades of the extractor were connected with an electric bell, which rang when the fragment was grasped, the circuit being then completed. The fragment was about 2 in. below the surface of the brain, and the patient made a good recovery. Capt. Barclay was the radiographer and Capt. Rayner the surgeon in charge of the case.

ALTHOUGH the National Seed Testing Station has been in operation only since November last it is clear from the interim report on the quality of existing stocks of agricultural seeds, which is published in the February number of the *Journal of the Board of Agriculture*, that a great deal of useful work has already been accomplished. Up to February 4 tests had already been completed on more than 2400 samples, and although in certain species the numbers of samples are too small to be taken as representative of the stocks of these seeds in the country, it is thought that the figures given in the report may be taken as a fair index of the standard of the more important seeds. It is reassuring to find that good seed in moderate quantity is available in the case of the more important crops, especially the grain crops. At the same time, it is evident that there will be a large amount of low-grade seed offered to farmers this season. This is particularly so in the case of red clover, sainfoin, and meadow fescue, which would seem to be considerably below the average of normal seasons. In the case of cereals, attention is directed to the undesirability in the national interest of making large sowings of grain of low germination when good samples of high germination are obtainable, and permit of a much lower rate of sowing. The staff of the station is to be congratulated upon the large amount of work accomplished under conditions of exceptional difficulty.

A STRIKING object-lesson on the capabilities of water-power, when adapted to industrial and manufacturing uses, was afforded in an exhibition of kinematograph films by Prof. J. C. McLennan, at the Institution of Civil Engineers, on the evening of March 12. The films were prepared by the Water-Power Branch of the Department of the Interior of Canada, of which Mr. J. B. Challis is superintendent. The exhibition was given under the auspices of the Canadian Government, and was intended to demonstrate the wonderful extent of the hydraulic resources of Canada. In his introductory remarks Prof. McLennan alluded briefly to the progress of the country; thirty years ago it might have been described as steady to variable, but during the past twelve years it had undergone a remarkable acceleration, which was apparently destined to become even more accentuated in the immediate future. This was due, in a very large measure, to the construction of the three great highways across the Dominion—the Canadian Pacific, the Canadian Northern, and the Grank Trunk Railways. Arising out of these as primary agencies, a great impetus had been given to agriculture, education, and industry. The water resources of Canada were estimated at twenty million horse-power, as compared with twenty-eight million horse-power in the United States, and of these some two million horse-power were now in use. The importance of the conservation of such stores of energy was fully recognised, and impounding works were being carried out in order to realise the utmost capabilities of supply, as might be instanced by the reservoir dam at La Loutre, which impounds 160,000,000,000 cub. ft., and has an effective drainage area of 16,200 square miles. One of the most important uses to which water-power had been applied was the solution of the problem of the fixation of nitrogen from the atmosphere. The films illustrated a number of waterfalls, reservoirs, and installations of hydro-electric plants in various parts of the Dominion, including Grand Mere, Shawinigan Falls, Cedar Rapids, St. Timothee, Winnipeg, Vancouver, and Niagara.

PART I of vol. xxx. of the Proceedings of the Royal Society of Victoria contains a description of a new dividing engine for ruling diffraction gratings by Mr. J. H. Grayson, of the University of Melbourne. The design and construction of this machine have occupied Mr. Grayson, whose skill in work of this type is well known, for seven years, and the completion of the task places spectroscopists under a great debt of gratitude to him. His paper contains a detailed description of the machine, and gives full particulars of the methods used for grinding and testing the screw. The machine is set up in a room of its own in the basement of the University, and is driven by a 1/40-h.p. hot-air engine placed in an adjoining room. Ruling diamonds are broken stones in which the fracture along a cleavage plane intersects an outer crystalline face and gives a good knife edge. Mr. Grayson finds the stones from the diamondiferous drift of New South Wales best for this purpose, and when ruling properly such a diamond makes no noise. The photographs which accompany the paper show that the rulings are extremely regular and warrant the hope that gratings ruled on the machine will give exceptionally clear spectra. The verdict of spectroscopists on the gratings will be awaited with considerable interest. In the meantime all will congratulate Mr. Grayson on the completion of his work, and the University of Melbourne on the public-spirited way in which it has provided facilities for that work.

IN his presidential address to the section of the Indian Science Congress dealing with Physics and Mathematics, Dr. Wali Mohammad has given an interesting account of recent progress in magneto-optics.

He reviews the more important results obtained since the publication of Zeeman's monograph upon the subject in 1912. Amongst the improvements in technique have been the introduction of the Wehnelt cathode lamp devised by Dr. Mohammad himself, the use of crossed spectra from two pieces of apparatus of high resolving power, and the construction of more powerful electromagnets. Nagaoka and Takamine have taken up the study of the Zeeman effect in the ultra-violet region, whilst Croze has extended his observations into the infra-red so far as the photographic methods allow. The effect of a magnetic field on the satellites of complex lines is likely to give a clue as to the mechanism of radiation and the production of spectrum lines. The study of the magnetic resolution of band spectra has attracted much attention. There is now no doubt of the fact that some band spectra show the Zeeman effect, but opinion is divided as to the existence of the effect in other cases. Certain dissymmetries have been observed both in the place and in the position of components, and several complicated types of magnetic resolution have been noticed. Anomalies of a different kind have been found in which the lines of a very close doublet or triplet series appear to influence each other in a peculiar manner. On the theoretical side Voigt has modified and extended the theory of Lorentz, introducing into the equations terms expressing a resistance, a quasi-elastic force, and allowing for the coupling of the electrons. It is to be noted that when the quantum hypothesis, as represented by Bohr's equations, is assumed, there is no place left for the quasi-elastic oscillating electrons which have been used in all theories for the explanation of the Zeeman effect from Lorentz to Voigt.

Now that our rations of food, particularly of meat and wheaten bread, have been so appreciably reduced the necessity of arranging our diet so as to ensure a sufficient supply of those elusive substances, the so-called "vitamines," is more important than ever. It is known that these substances exist in certain foods, and that an adequate supply of them is necessary to health, but they have not yet been isolated in a pure condition, although several workers claim to have done so successfully. As a result of some recent work, McCollum and Davis concluded that two distinct types of vitamine exist, the "fat-soluble A" and the "water-soluble B." In the *Biochemical Journal* for December Mr. J. C. Drummond describes yet another attempt to isolate the latter type of accessory substance. Unfortunately the attempt failed, but several interesting observations were made. In Mr. Drummond's experiments pure-bred rats were fed on a basal artificial diet containing all the necessary constituents except the water-soluble, growth-promoting accessory substance, and also on the same diet together with marmite which had been treated in various ways. From the variation of the live weight of the rats the presence or absence of the "water-soluble B" in the treated marmite is inferred. In this way it is established that the water-soluble accessory substance is (1) soluble in 70 per cent. alcohol, but insoluble in absolute alcohol; (2) dialysable through parchment paper; (3) injured by heating at 120°, but very little affected at 100°; (4) largely destroyed by prolonged boiling with 20 per cent. sulphuric acid, but not with 1 per cent. hydrochloric acid; and (5) much damaged by digestion with hot 5 per cent. sodium hydroxide, but very little affected by the same solution cold. Water solutions containing the active substance give voluminous precipitates with phosphotungstic acid, basic lead acetate, and silver nitrate, but the solutions recovered from these precipitates by the customary methods have little activity. The author attributes this fact to loss of the substance by adsorption rather than to its actual destruction. The results support the view that the so-called "antineuritic vitamine" is identical with the "water-soluble B."

MR. F. EDWARDS, 83 High Street, Marylebone, has just published a catalogue (No. 381) of books on British and foreign birds. It contains some 642 titles. Some of the books are scarce. Two sets of the *Ibis* (1859–1915) are offered for sale.

MESSRS. GAUTHIER-VILLARS ET CIE (Paris) announce the following science books:—Œuvres de Henri Poincaré publiées sous les auspices du Ministère de l'Instruction publique par G. Darboux, tome i.; Œuvres de G. H. Halphen publiées par les soins de C. Jordan, H. Poincaré, E. Picard, avec la collaboration de E. Vessiot, quatre vols., tomes ii., iii., et iv.; Cours de Géométrie pure et appliquée de l'Ecole Polytechnique, Prof. M. d'Ocagne, tome ii., Cinématique appliquée, Stéréotomie, Statique graphique, Calcul graphique, Calcul grapho-mécanique, Nomographie.

OUR ASTRONOMICAL COLUMN.

THE PLANET MARS.—This planet came to opposition with the sun on the morning of March 15. On that date Mars was about sixty-one million miles distant from the earth, and had an apparent diameter of a little more than fourteen seconds of arc. The planet is now situated in Leo, on the eastern border, and moving to the W.N.W.

The present opposition of the planet is by no means a favourable one for the study of his surface markings. It is curious, however, that some excellent views of the markings have been obtained on occasions when the disc was comparatively small, and when little success in this direction was expected. The fact is that certain lineaments on Mars, such as the Syrtis Major, the Mare Sirenum, Cimmerium, and Acidalium, are so conspicuously dark and large that a very small telescope is sufficient to show them, and they may be viewed even when the conditions are not altogether favourable.

Perhaps the features on Mars are, however, scarcely so easily discerned as those on Jupiter, owing to the expansive disc of the latter object. But the study of Martian markings is more interesting from the fact that they represent objects existing on its actual surface, while Jovian details are merely temporary, outside formations of atmospheric character.

The double canals on Mars are now justly regarded as one of the observational romances of astronomy. The single canals have even been assailed as non-existent, but there is no question whatever that a series of linear formations is scattered over the equatorial and south-equatorial regions of the disc. Scepticism was aroused by the hard, dark, and straight lines by which some observers erroneously represented the delicate streaks of shading which really diversify the planet's surface, and certainly look nothing like water channels to an unimaginative observer.

It is to be hoped that the renewed study of the topography of Mars will be successfully made at this opposition, and the revised rotation period of 24h. 37m. 22·57s. tested by fresh data.

WOLF'S NOVA.—Besides the interesting planet found in January, Prof. Wolf also discovered a Nova in Monoceros. The Harvard plates have enabled its previous history to be traced. It was fainter than 9·8 mag. on December 22, rising to 5·4 by January 1 (being thus the brightest Nova since 1912). It declined rapidly, reaching mag. 8·9 on February 4, 9·0 on February 17, 9·1 on February 22. It is 10° north and 2° west of Sirius, and, like most Novæ, lies within the Galactic Zone.

Dr. Mundler gives the position for 1918·0 as R.A. 7h. 22m. 47·00s., S. declination 6° 30′ 34·7″.